

**ACIDIC PRECIPITATION IN ONTARIO  
STUDY - ANNUAL STATISTICS OF  
CONCENTRATION AND DEPOSITION  
DAILY PRECIPITATION AND AIR  
MONITORING NETWORK, 1991  
ARB-051-93**

**MARCH 1994**



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PART I

INTRODUCTION



## **INTRODUCTION**

The statistical summaries presented in this report pertain to the 1991 analytical results obtained from the Acidic Precipitation in Ontario Study (APIOS) cumulative precipitation monitoring network. The relevant data can be obtained on request from the Air Resources Branch of The Ministry of Environment and Energy. All available data are utilized in the calculations except results reported as being unreliable (i.e., results are identified as unreasonable values by using the validation procedures; detailed description of the validation procedures is available from the Ministry upon request) or approximate (i.e., inexact results are reported due to laboratory difficulties, such as may be encountered in calibration, or when the sample cannot be re-analyzed to confirm the reported value). In a very few cases, concentration levels exceeded the upper limit of the range of the chemical analysis. Rather than using the upper limit, a decision was made to exclude these values from the statistics generated in this report. Reported results for metals which have missing leachate analysis are also excluded from statistical analysis. Results labelled as <W are replaced by "zero". W is the level which the analytical technique cannot distinguish from zero. Prior to 1986, if a level was recorded less than the detection limit T, a value corresponding to one half the detection limit was utilized for statistical calculations as reported in the statistical summaries. These values are no longer halved. Note that T is normally about ten times W, and values

above the T criteria are considered to be precise and accurate. The reported cumulative precipitation gauge depth (or an interpolated value from Environment Canada's Climate data) is utilized in the calculation of deposition. If a precipitation gauge value is not available, then the collected sample volume is converted to its equivalent precipitation depth and is used in the deposition calculation.

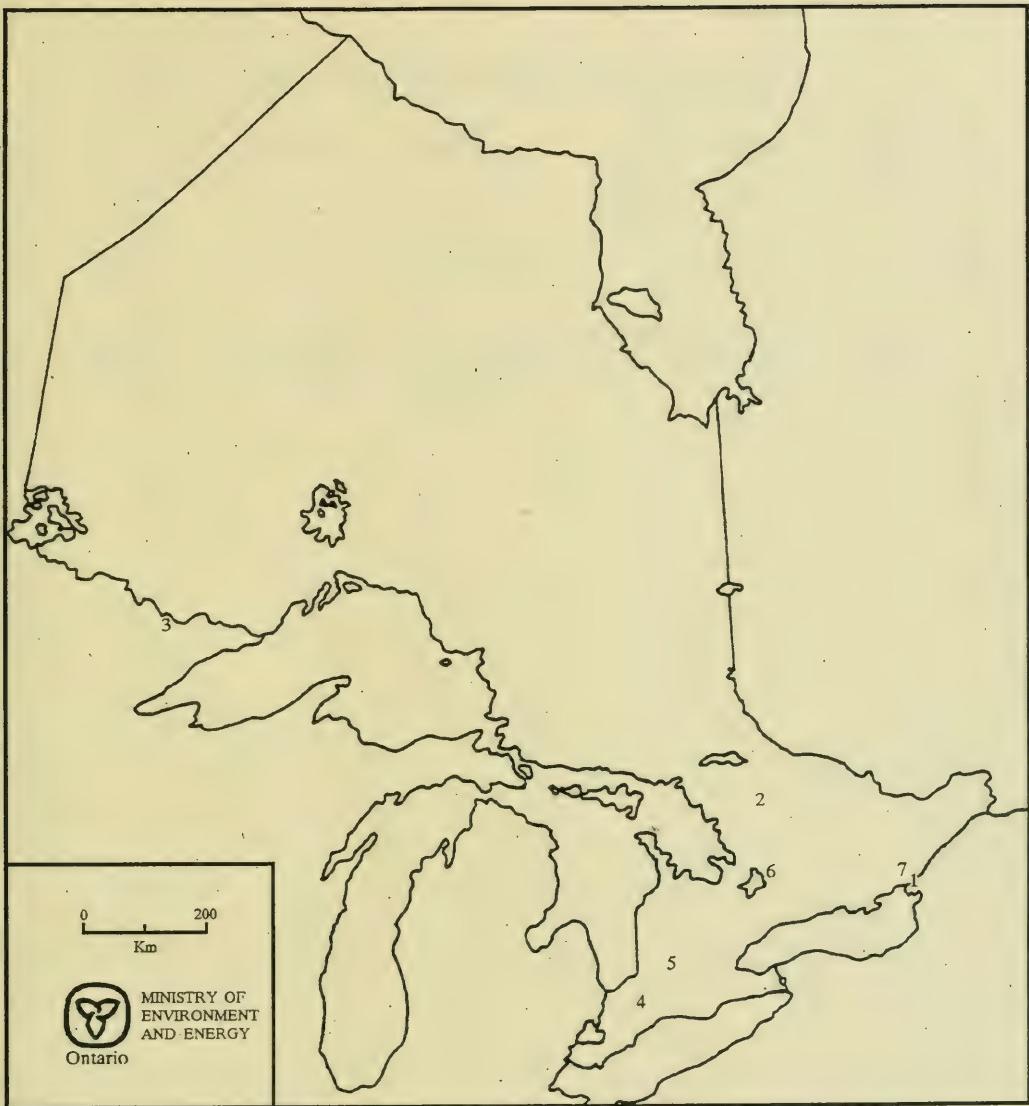
In the air concentration statistical summaries. "Nitric" represents "Nitric Acid" and "Total Nitrate" represents total nitrates calculated by the summation of particulate "Nitrate" and "Nitric Acid". The air filter measurement for sulphur dioxide includes a contribution for nylon-filter impregnated SO<sub>4</sub>. In these reports the sulphur on nylon filters is interpreted as sulphur dioxide. However, it is possible that organic sulphur compounds also contribute to this loading. Methods do not currently exist to quantify this contribution in routine network operation.

The statistical summaries presented in Parts III to VI include number of samples, mean (arithmetic/geometric), standard deviation, maximum, minimum, quartiles and precipitation weighted means using precipitation gauge depths where appropriate.

**PART II**

**STATION LOCATION**





- 1. CHARLESTON LAKE
- 2. DORSET \*
- 3. FERNBERG \*
- 4. LONGWOODS \*
- 5. NORTH EASTHOPE
- 6. RAVEN LAKE
- 7. WILMER

\* Indicates both a wet and dry network site

**APIOS DAILY PRECIPITATION AND AIR NETWORK SITES**

<b>MOE REGION</b>	<b>STATION NAME</b>	<b>LATITUDE</b>	<b>LONGITUDE</b>	<b>NORTHING</b>	<b>EASTING</b>
Southwestern	Longwood	42°53'03"	81°28'50"	4747849	460756
	North Easthope	43°24'22"	80°53'45"	4805705	508434
Central	Dorset	45°13'26"	78°55'52"	5009650	662400
	Raven Lake	44°36'40"	78°54'43"	4941655	665686
Southeastern	Charleston Lake	44°29'50"	76°02'40"	4927414	416963
	Wilmer	44°26'23"	76°31'50"	4921637	378195
Northwestern	Fernberg	47°56'51"	91°29'26"	5311349	612714

PART III

SUMMARY STATISTICS OF PRECIPITATION CONCENTRATION BY STATION



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 1991 SUMMARY STATISTICS OF CONCENTRATION

STATION: LONGWOODS AEROCHEM SITE NO.1

	EQUIVALENT PREC. MM	DEPTH MM	CONDUCT UMHO/CM	FIELD PH	LAB. PH	SULFATE MG/L	NITRATE MG/L	CALCIUM MG/L
# OF SAMPLES	:	103	103	103	103	103	103	103
MAXIMUM	:	36.0	122.00	6.39	7.98	14.55	2.18	5.60
MINIMUM	:	0.0	3.50	3.52	3.56	0.00	0.00	0.03
ARITH. MEAN	:	6.7	32.45	4.19	4.78	3.49	0.79	0.84
ARITH. STD. DEV.	:	6.6	21.35	0.60	0.99	2.78	0.52	1.05
GEOM. MEAN	:	4.3	26.39	4.15	4.70	2.65	0.65	0.44
1ST QUARTILE	:	1.8	18.00	3.77	4.17	1.75	0.36	0.21
2ND QUARTILE	:	4.0	29.50	4.09	4.39	2.78	0.75	0.38
3RD QUARTILE	:	9.5	42.00	4.31	4.89	4.30	1.00	1.02
VOL. WGT. MEAN	:	0	28.39	0	0	2.99	0.58	0.44
MISSING VALUES	:	0	0	59	7	10	10	10
	CHLORIDE MG/L	MAGNESIUM MG/L	POTASSIUM MG/L	SODIUM MG/L	AMMONIUM MG/L	ACIDITY GRAN UG/L	FRESH+ LAB UG/L	
# OF SAMPLES	:	103	103	103	103	103	103	103
MAXIMUM	:	1.50	2.120	26.600	0.835	4.100	288.00	275.42
MINIMUM	:	0.01	0.005	0.015	0.000	0.000	6.08	0.01
ARITH. MEAN	:	0.34	0.171	0.412	0.155	0.592	73.30	48.67
ARITH. STD. DEV.	:	0.28	0.275	2.694	0.171	0.554	52.85	51.08
GEOM. MEAN	:	0.25	0.084	0.080	0.107	0.442	57.65	16.43
1ST QUARTILE	:	0.14	0.035	0.030	0.045	0.260	35.40	12.02
2ND QUARTILE	:	0.27	0.070	0.068	0.098	0.470	65.00	40.75
3RD QUARTILE	:	0.47	0.215	0.150	0.180	0.734	97.70	66.83
VOL. WGT. MEAN	:	0.24	0.088	0.160	0.103	0.445	74.36	49.68
MISSING VALUES	:	0	0	9	7	6	8	7

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 1991 SUMMARY STATISTICS OF CONCENTRATION

STATION : NORTH EASTHOPE AEROCHEM SITE NO.1

	EQUIVALENT PREC. DEPTH MM	CONDUCT UMHO/CM	FIELD PH	LAB PH	SULFATE MG/L	NITRATE MG/L	CALCIUM MG/L	FREEH+ LAB UG/L
# OF SAMPLES	55	55	55	55	55	55	55	55
MAXIMUM	19.8	140.00	5.30	7.54	23.50	3.73	8.13	
MINIMUM	0.0	1.50	5.30	3.18	0.40	0.03	0.03	
ARITH. MEAN	3.7	27.57	5.30	5.27	2.71	0.89	1.32	
ARITH. STD. DEV.	4.0	21.95	0.00	1.24	3.51	0.66	1.68	
GEOM. MEAN	2.3	20.78	5.30	5.13	1.86	0.69	0.58	
1ST QUARTILE	0.9	14.00	5.30	4.22	1.05	0.53	0.26	
2ND QUARTILE	2.7	22.75	5.30	4.93	2.00	0.78	0.76	
3RD QUARTILE	5.0	35.00	5.30	6.35	3.25	1.05	1.34	
VOL. WGT. MEAN		23.93	54	2.12	0.68	0.79		
MISSING VALUES	0	3	2	4	5	12	12	
	CHLORIDE MG/L	MAGNESIUM MG/L	POTASSIUM MG/L	SODIUM MG/L	AMMONIUM MG/L	ACIDITY GRAN UG/L		
# OF SAMPLES	55	55	55	55	55	55	55	55
MAXIMUM	3.58	1.526	0.375	1.143	6.050	308.00	659.13	
MINIMUM	0.01	0.005	0.000	0.015	0.013	10.70	0.03	
ARITH. MEAN	0.57	0.277	0.069	0.265	0.626	64.48	47.23	
ARITH. STD. DEV.	0.72	0.371	0.076	0.303	0.851	57.53	97.33	
GEOM. MEAN	0.31	0.114	0.049	0.146	0.388	45.16	5.40	
1ST QUARTILE	0.14	0.045	0.025	0.065	0.248	21.20	0.45	
2ND QUARTILE	0.27	0.135	0.045	0.140	0.454	47.30	11.86	
3RD QUARTILE	0.71	0.325	0.070	0.370	0.732	98.50	60.26	
VOL. WGT. MEAN	0.27	0.173	0.045	0.136	0.442	53.73	29.38	
MISSING VALUES	4	6	5	5	12			

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 1991 SUMMARY STATISTICS OF CONCENTRATION

STATION: DORSET AEROCHEM SITE NO.1

	EQUIVALENT PREC. DEPTH MM	CONDUCT UMHO/CM	FIELD.PH	LAB.PH	SULFATE MG/L	NITRATE MG/L	CALCIUM MG/L
# OF SAMPLES	209	209	209	209	209	209	209
MAXIMUM	49.2	84.50	6.41	7.29	13.00	5.43	5.85
MINIMUM	0.0	1.00	3.71	3.35	0.00	0.00	0.00
ARITH. MEAN	4.8	23.71	4.42	4.54	2.43	0.67	0.39
ARITH. STD. DEV.	7.1	18.31	0.38	0.59	2.30	0.69	0.78
GEOM. MEAN	2.3	16.84	4.41	4.50	1.60	0.45	0.22
1ST QUARTILE	0.4	10.00	4.17	4.16	0.85	0.25	0.06
2ND QUARTILE	2.0	18.50	4.38	4.45	1.80	0.47	0.15
3RD QUARTILE	6.2	34.00	4.61	4.81	3.33	0.91	0.37
VOL. WGT. MEAN	0	22.17	4.0	3.6	2.02	0.43	0.18
MISSING VALUES	0	0	0	0	43	44	43
	CHLORIDE MG/L	MAGNESIUM MG/L	POTASSIUM MG/L	SODIUM MG/L	AMMONIUM MG/L	ACIDITY GRAN UG/L	FREEH+ LAB UG/L
# OF SAMPLES	209	209	209	209	209	209	209
MAXIMUM	2.91	0.954	0.886	2.000	5.030	237.00	443.57
MINIMUM	0.00	0.000	0.000	0.000	0.000	117.80	0.05
ARITH. MEAN	0.23	0.067	0.074	0.114	0.513	67.68	54.23
ARITH. STD. DEV.	0.31	0.134	0.116	0.193	0.728	42.45	61.39
GEOM. MEAN	0.14	0.062	0.044	0.095	0.298	57.16	29.06
1ST QUARTILE	0.06	0.010	0.020	0.020	0.080	38.00	15.49
2ND QUARTILE	0.12	0.025	0.035	0.055	0.272	56.90	35.48
3RD QUARTILE	0.28	0.065	0.080	0.130	0.578	85.40	69.18
VOL. WGT. MEAN	0.12	0.033	0.032	0.065	0.326	64.04	42.05
MISSING VALUES	0.40	0.41	0.41	0.41	0.35	0.66	0.36

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STATION: RAVEN LAKE AEROCHEM SITE NO. 1

EQUIVALENT PREC. DEPTH MM	# OF SAMPLES	CONDUCT UMHO/CM	FIELD PH	LAB. PH	SULFATE MG/L	NITRATE MG/L	CALCIUM MG/L	FREE LAB UG/L
							MISSING VALUES	
MAXIMUM	58	58	58	58	58	58	58	58
MINIMUM	20.2	94.50	5.94	7.12	7.25	2.07	2.79	0.02
ARITH. MEAN	0.0	1.00	3.78	3.73	0.20	0.03	0.03	0.38
ARITH. STD. DEV.	3.2	28.46	4.41	4.62	1.93	0.76	0.44	0.54
GEOM. MEAN	4.8	21.29	0.43	0.74	1.79	0.44	0.62	0.20
1ST QUARTILE	1.7	19.68	4.39	4.57	1.28	0.62	0.09	0.09
2ND QUARTILE	0.2	14.00	4.18	4.17	0.67	0.44	0.20	0.20
3RD QUARTILE	1.1	25.75	4.31	4.35	1.20	0.70	0.40	0.40
VOL. WGT. MEAN	4.0	38.00	4.58	4.86	2.70	1.00	0.25	0.25
MISSING VALUES	0	26.75	36	36	1.99	0.59	0.17	0.17
CHLORIDE MG/L	# OF SAMPLES	MAGNESIUM MG/L	POTASSIUM MG/L	SODIUM MG/L	AMMONIUM MG/L	ACIDITY GRAN UG/L	FREE LAB UG/L	
MAXIMUM	58	58	58	58	58	58	58	58
MINIMUM	0.93	0.505	0.233	1.225	1.380	226.00	186.21	186.21
ARITH. MEAN	0.02	0.000	0.005	0.015	0.000	16.10	0.08	0.08
ARITH. STD. DEV.	0.26	0.057	0.045	0.163	0.319	78.96	48.06	42.06
GEOM. MEAN	0.24	0.097	0.043	0.203	0.342	48.13	64.70	23.76
1ST QUARTILE	0.17	0.039	0.031	0.099	0.193	39.20	13.80	13.80
2ND QUARTILE	0.08	0.010	0.015	0.040	0.078	78.05	44.67	44.67
3RD QUARTILE	0.18	0.030	0.030	0.095	0.186	98.10	67.61	67.61
VOL. WGT. MEAN	0.32	0.045	0.054	0.218	0.394	71.75	47.31	47.31
MISSING VALUES	0.16	0.039	0.027	0.085	0.283	17	22	17

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STATION: CHARLESTON LAKE AEROCHEM SITE NO.1

	EQUIVALENT PREC. DEPTH MM	CONDUCT UMHO/CM	FIELD.PH	LAB.PH	SULFATE MG/L	NITRATE MG/L	CALCIUM MG/L
# OF SAMPLES	:	117	117	117	117	117	117
MAXIMUM	:	48.0	308.00	7.04	7.78	31.15	3.08
MINIMUM	:	0.2	0.40	3.25	3.16	0.00	2.79
ARITH. MEAN	:	7.1	31.67	4.40	4.48	2.83	0.00
ARITH. STD. DEV.	:	8.0	32.70	0.61	0.68	0.66	0.31
GEOM. MEAN	:	4.1	21.44	4.37	4.44	3.49	0.44
1ST QUARTILE	:	2.0	16.50	4.10	4.12	1.05	0.51
2ND QUARTILE	:	4.6	26.50	4.25	4.31	2.25	0.58
3RD QUARTILE	:	8.7	39.00	4.49	4.53	3.30	0.90
VOL. WGT. MEAN	:	8.7	28.46	4.48	4.50	2.48	0.42
MISSING VALUES	:	0	8	17	7	0	0.19
	CHLORIDE MG/L	MAGNESIUM MG/L	POTASSIUM MG/L	SODIUM MG/L	AMMONIUM MG/L	ACIDITY GRAN UG/L	FREEH+ LAB UG/L
# OF SAMPLES	:	117	117	117	117	117	117
MAXIMUM	:	0.92	0.875	4.345	0.813	31.500	728.00
MINIMUM	:	0.00	0.000	0.000	0.000	0.014	14.90
ARITH. MEAN	:	0.18	0.062	0.079	0.074	0.668	88.13
ARITH. STD. DEV.	:	0.18	0.106	0.402	0.112	2.882	78.66
GEOM. MEAN	:	0.12	0.053	0.038	0.083	0.295	70.96
1ST QUARTILE	:	0.06	0.010	0.010	0.010	0.168	51.90
2ND QUARTILE	:	0.13	0.028	0.020	0.035	0.308	74.70
3RD QUARTILE	:	0.22	0.075	0.045	0.090	0.574	107.00
VOL. WGT. MEAN	:	0.12	0.040	0.037	0.057	0.396	75.86
MISSING VALUES	:	5	1	1	0	0	53.33

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 1991 SUMMARY STATISTICS OF CONCENTRATION

STATION: WILMER AEROCHEM SITE NO.1

	EQUIVALENT PREC. DEPTH MM	CONDUCT UMHO/CM	FIELD.PH	LAB.PH	SULFATE MG/L	NITRATE MG/L	CALCIUM MG/L
# OF SAMPLES	: 45	: 45	: 45	: 45	: 45	: 45	: 45
MAXIMUM	: 26.6	: 45.50	: 4.94	: 4.98	: 3.70	: 0.95	: 0.48
MINIMUM	: 0.2	: 4.50	: 1.47	: 3.74	: 0.00	: 0.00	: 0.00
ARITH. MEAN	: 4.8	: 22.98	: 4.22	: 4.38	: 1.63	: 0.45	: 0.18
ARITH. STD. DEV.	: 6.1	: 11.49	: 0.71	: 0.28	: 0.99	: 0.24	: 0.14
GEOM. MEAN	: 2.4	: 19.77	: 4.12	: 4.38	: 1.41	: 0.43	: 0.15
1ST QUARTILE	: 0.8	: 14.00	: 4.17	: 4.17	: 1.00	: 0.32	: 0.07
2ND QUARTILE	: 2.8	: 22.00	: 4.29	: 4.35	: 1.70	: 0.46	: 0.15
3RD QUARTILE	: 5.4	: 31.50	: 4.55	: 4.57	: 2.25	: 0.66	: 0.27
VOL. WGT. MEAN	: 18.55	: 24	: 27	: 21	: 26	: 0.35	: 0.12
MISSING VALUES	: 0					: 20	
	CHLORIDE MG/L	MAGNESIUM MG/L	POTASSIUM MG/L	SODIUM MG/L	AMMONIUM MG/L	ACIDITY GRAN UG/L	FREEH+ LAB UG/L
# OF SAMPLES	: 45	: 45	: 45	: 45	: 45	: 45	: 45
MAXIMUM	: 0.35	: 0.070	: 0.120	: 0.227	: 0.758	: 212.00	: 181.97
MINIMUM	: 0.00	: 0.000	: 0.000	: 0.000	: 0.032	: 26.60	: 10.47
ARITH. MEAN	: 0.10	: 0.023	: 0.022	: 0.067	: 0.247	: 77.08	: 50.68
ARITH. STD. DEV.	: 0.09	: 0.020	: 0.023	: 0.058	: 0.155	: 39.73	: 35.35
GEOM. MEAN	: 0.09	: 0.040	: 0.031	: 0.056	: 0.197	: 68.76	: 41.27
1ST QUARTILE	: 0.04	: 0.010	: 0.010	: 0.030	: 0.144	: 46.80	: 24.55
2ND QUARTILE	: 0.06	: 0.020	: 0.015	: 0.045	: 0.218	: 69.35	: 44.68
3RD QUARTILE	: 0.14	: 0.035	: 0.025	: 0.110	: 0.314	: 96.00	: 67.61
VOL. WGT. MEAN	: 0.08	: 0.022	: 0.023	: 0.057	: 0.198	: 64.87	: 41.43
MISSING VALUES	: 0					: 20	: 21

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 1991 SUMMARY STATISTICS OF CONCENTRATION

STATION: FERNBERG AEROCHEM SITE NO. 1

	EQUIVALENT PREC. MM	DEPTH MM	CONDUCT UMHO/CM	FIELD PH	LAB. PH	SULFATE MG/L	NITRATE MG/L	CALCIUM MG/L
# OF SAMPLES	:	155	155	155	155	155	155	155
MAXIMUM	:	37.0	88.00	8.80	8.30	2.28	3.01	
MINIMUM	:	0.0	0.80	3.74	0.00	0.00	0.00	
ARITH. MEAN	:	4.9	10.19	5.20	0.34	0.34	0.34	
ARITH. STD. DEV.	:	6.8	11.14	0.67	1.35	0.36	0.46	
GEOM. MEAN	:	1.9	7.15	5.15	0.86	0.28	0.18	
1ST QUARTILE	:	0.5	4.00	4.77	0.35	0.11	0.03	
2ND QUARTILE	:	2.0	7.50	5.08	0.85	0.25	0.09	
3RD QUARTILE	:	6.2	11.50	5.42	1.60	0.41	0.28	
VOL. WGT. MEAN	:	0	7.91	1.00	0.25	0.18	0.18	
MISSING VALUES	:	33	155	31	35	35	34	
<hr/>								
	CHLORIDE MG/L	MAGNESIUM MG/L	BORONATIUM MG/L	SODIUM MG/L	AMMONIUM MG/L	FREE+ LAB UG/L	ACIDITY GRAN UG/L	FREE+ LAB UG/L
# OF SAMPLES	:	155	155	155	155	155	155	155
MAXIMUM	:	0.86	0.500	0.720	0.716	3.011	196.00	181.97
MINIMUM	:	0.00	0.000	0.000	0.000	0.000	0.000	0.000
ARITH. MEAN	:	0.11	0.042	0.052	0.052	0.361	18.11	0.16
ARITH. STD. DEV.	:	0.14	0.010	0.095	0.081	0.486	34.73	15.34
GEOM. MEAN	:	0.08	0.053	0.054	0.081	0.186	22.56	23.68
1ST QUARTILE	:	0.04	0.005	0.010	0.010	0.058	31.18	6.38
2ND QUARTILE	:	0.06	0.015	0.025	0.026	0.188	22.66	3.80
3RD QUARTILE	:	0.14	0.055	0.050	0.070	0.116	37.40	8.32
VOL. WGT. MEAN	:	0.06	0.032	0.033	0.037	0.277	31.04	16.60
MISSING VALUES	:	33	34	34	34	29	49	31



**PART IV**

**SUMMARY STATISTICS OF PRECIPITATION CONCENTRATION BY REGION**



ONTARIO MINISTRY OF ENVIRONMENT & ENERGY  
 APIOS - ACIDIC PRECIPITATION IN ONTARIO STUDY  
 1991 SUMMARY STATISTICS OF CONCENTRATION

REGION:	CE	EQUIVALENT PREC. DEPTH MM	CONDUCT UMHO/CM	FIELD.PH	LAB.PH	SULFATE MG/L	NITRATE MG/L	CALCIUM MG/L
# OF SAMPLES	:	422	422	422	422	422	422	422
MAXIMUM	:	49.2	94.50	6.41	7.29	13.00	5.43	5.85
MINIMUM	:	0.0	0.80	3.71	3.35	0.00	0.00	0.00
ARITH. MEAN	:	4.6	19.24	4.42	4.79	1.97	0.56	0.34
ARITH. STD. DEV.	:	6.7	17.92	0.39	0.71	2.06	0.58	0.65
GEOM. MEAN	:	2.1	12.48	4.40	4.74	1.24	0.39	0.20
1ST QUARTILE	:	0.4	6.50	4.17	4.29	0.18	0.05	0.05
2ND QUARTILE	:	1.9	14.00	4.36	4.68	1.23	0.38	0.14
3RD QUARTILE	:	6.0	26.50	4.61	5.14	2.65	0.77	0.36
VOL. WGT. MEAN	:	0	17.13	2.84	84	1.63	0.38	0.19
MISSING VALUES	:	0	93		94	96	94	94
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CHLORIDE MG/L	MAGNESIUM MG/L	POTASSIUM MG/L	SODIUM MG/L	AMMONIUM MG/L	ACIDITY GRAN UG/L	FRESH+ LAB UG/L	ACIDITY GRAN UG/L	FREEH+ LAB UG/L
# OF SAMPLES	:	422	422	422	422	422	422	422
MAXIMUM	:	2.91	0.954	0.886	2.000	5.030	237.00	443.57
MINIMUM	:	0.00	0.000	0.000	0.000	0.000	16.10	0.05
ARITH. MEAN	:	0.19	0.057	0.062	0.097	0.433	56.85	39.21
ARITH. STD. DEV.	:	0.26	0.110	0.103	0.167	0.615	41.09	51.80
GEOM. MEAN	:	0.12	0.055	0.045	0.090	0.238	46.34	16.26
1ST QUARTILE	:	0.05	0.010	0.015	0.020	0.070	27.70	7.24
2ND QUARTILE	:	0.10	0.021	0.030	0.045	0.226	42.08	20.89
3RD QUARTILE	:	0.24	0.055	0.060	0.115	0.506	71.50	51.29
VOL. WGT. MEAN	:	0.10	0.033	0.032	0.058	0.303	52.16	30.59
MISSING VALUES	:	90	92	92	92	81	84	84

ONTARIO MINISTRY OF ENVIRONMENT & ENERGY  
 APIOS - ACIDIC PRECIPITATION IN ONTARIO STUDY  
 1991 SUMMARY STATISTICS OF CONCENTRATION

## REGION: NW

	EQUIVALENT PREC. DEPTH MM	CONDUCT UMHO/CM	FIELD PH	LAB PH	SULFATE MG/L	NITRATE MG/L	CALCIUM MG/L
# OF SAMPLES	155	155	155	155	155	155	155
MAXIMUM	37.0	88.00	.	6.80	8.30	2.28	3.01
MINIMUM	0.0	0.80	.	3.74	0.00	0.00	0.00
ARITH. MEAN	4.9	10.19	.	5.20	1.35	0.34	0.27
ARITH. STD. DEV.	6.8	11.14	.	0.67	1.59	0.36	0.46
GEOM. MEAN	1.9	7.15	.	5.15	0.86	0.28	0.18
1ST QUARTILE	0.5	4.00	.	4.77	0.35	0.11	0.03
2ND QUARTILE	2.0	7.50	.	5.08	0.85	0.25	0.09
3RD QUARTILE	6.2	11.50	.	5.42	1.60	0.41	0.28
VOL. WGT. MEAN	0	7.91	33	155	31	0.25	0.18
MISSING VALUES					35	34	34
CHLORIDE MG/L	MAGNESIUM MG/L	POTASSIUM MG/L	SODIUM MG/L	AMMONIUM MG/L	ACIDITY GRAN UG/L	FREEH+ LAB UG/L	
# OF SAMPLES	155	155	155	155	155	155	155
MAXIMUM	0.86	0.500	0.720	0.716	3.011	196.00	181.97
MINIMUM	0.00	0.000	0.000	0.000	0.000	18.11	0.16
ARITH. MEAN	0.11	0.042	0.052	0.052	0.361	34.73	15.34
ARITH. STD. DEV.	0.14	0.070	0.095	0.091	0.486	22.56	23.68
GEOM. MEAN	0.08	0.053	0.054	0.081	0.186	31.38	6.38
1ST QUARTILE	0.04	0.005	0.010	0.010	0.058	22.66	3.80
2ND QUARTILE	0.06	0.015	0.025	0.026	0.188	28.55	8.32
3RD QUARTILE	0.14	0.055	0.050	0.070	0.416	37.40	16.60
VOL. WGT. MEAN	0.06	0.032	0.033	0.037	0.277	31.04	10.81
MISSING VALUES	33	34	34	34	34	31	31

ONTARIO MINISTRY OF ENVIRONMENT & ENERGY  
 APIOS - ACIDIC PRECIPITATION IN ONTARIO STUDY  
 1991 SUMMARY STATISTICS OF CONCENTRATION

REGION:	SE	EQUIVALENT PREC. DEPTH MM	CONDUCT UMHO/CM	FIELD-PH	LAB-PH	SULFATE MG/L	NITRATE MG/L	CALCIUM MG/L	FREEH+ LAB UG/L	ACIDITY GRAN UG/L
# OF SAMPLES	:	162	162	1.62	1.62	162	162	162	162	162
MAXIMUM	:	48.0	308.00	7.04	7.78	31.15	3.08	2.79	691.83	691.83
MINIMUM	:	0.2	0.40	1.47	3.16	0.00	0.00	0.00	0.02	0.02
ARITH. MEAN	:	6.4	30.46	4.37	4.46	2.65	0.63	0.29	59.55	59.55
ARITH. STD. DEV.	:	7.6	30.46	0.63	0.63	3.27	0.45	0.40	73.44	68.15
GEOM. MEAN	:	3.5	21.49	4.33	4.43	1.76	0.50	0.18	70.57	34.30
1ST QUARTILE	:	1.8	15.50	4.11	4.14	1.05	0.32	0.06	74.20	48.98
2ND QUARTILE	:	4.0	26.50	4.26	4.31	1.81	0.55	0.14	106.00	72.44
3RD QUARTILE	:	7.7	37.00	4.50	4.55	3.15	0.82	0.18	74.90	51.38
VOL. WGT. MEAN	:	26.93	44	28	33	2.34	0.48	0.18	21	37
MISSING VALUES	:	0	32	44	28	33	2.34	0.18	20	28
CHLORIDE MG/L		MAGNESIUM MG/L	POTASSIUM MG/L	SODIUM MG/L	AMMONIUM MG/L					
# OF SAMPLES	:	162	162	162	162	162	162	162	162	162
MAXIMUM	:	0.92	0.875	4.345	0.813	31.500	31.500	72.00	72.00	72.00
MINIMUM	:	0.00	0.000	0.000	0.000	0.014	0.014	14.90	14.90	14.90
ARITH. MEAN	:	0.17	0.055	0.069	0.073	0.594	0.594	86.18	86.18	86.18
ARITH. STD. DEV.	:	0.17	0.098	0.365	0.105	2.621	2.621	73.44	73.44	73.44
GEOM. MEAN	:	0.12	0.050	0.036	0.078	0.275	0.275	70.57	70.57	70.57
1ST QUARTILE	:	0.05	0.010	0.010	0.020	0.166	0.166	51.70	51.70	51.70
2ND QUARTILE	:	0.12	0.025	0.020	0.035	0.295	0.295	74.20	74.20	74.20
3RD QUARTILE	:	0.21	0.060	0.040	0.095	0.506	0.506	106.00	106.00	106.00
VOL. WGT. MEAN	:	0.11	0.037	0.035	0.057	0.362	0.362	74.90	74.90	74.90
MISSING VALUES	:	31	21	21	21	21	21	20	20	20

ONTARIO MINISTRY OF ENVIRONMENT & ENERGY  
 APIOS - ACIDIC PRECIPITATION IN ONTARIO STUDY  
 1991 SUMMARY STATISTICS OF CONCENTRATION

REGION: SW

	EQUIVALENT PREC. MM	FIELD.PH	LAB.PH	SULFATE MG/L	NITRATE MG/L	CALCIUM MG/L
# OF SAMPLES	158	158	158	158	158	158
MAXIMUM	36.0	140.00	6.39	7.98	23.50	3.73
MINIMUM	0.0	1.50	3.52	3.18	0.00	0.03
ARITH. MEAN	5.6	30.70	4.21	4.96	3.21	0.83
ARITH. STD. DEV.	6.0	21.70	0.61	1.11	3.08	0.57
GEOM. MEAN	3.4	24.22	4.17	4.85	2.34	0.66
1ST QUARTILE	1.6	17.00	3.84	4.18	1.35	0.39
2ND QUARTILE	3.4	26.50	4.10	4.50	2.55	0.76
3RD QUARTILE	8.0	40.50	4.35	5.46	4.03	1.05
VOL. WGT. MEAN	0	27.34	1.13	1.13	2.78	0.60
MISSING VALUES	0			9	1.15	1.16
CHLORIDE MG/L	MAGNESIUM MG/L	POTASSIUM MG/L	SODIUM MG/L	AMMONIUM MG/L	ACIDITY GRAN UG/L	FREEH+ LAB UG/L
# OF SAMPLES	158	158	158	158	158	158
MAXIMUM	3.58	2.130	26.600	1.143	6.050	30.00
MINIMUM	0.01	0.005	0.000	0.000	0.000	6.08
ARITH. MEAN	0.42	0.207	0.295	0.192	0.604	70.55
ARITH. STD. DEV.	0.49	0.315	2.191	0.231	0.674	54.51
GEOM. MEAN	0.27	0.093	0.068	0.119	0.422	53.42
1ST QUARTILE	0.14	0.035	0.030	0.050	0.258	26.70
2ND QUARTILE	0.27	0.085	0.060	0.108	0.461	61.20
3RD QUARTILE	0.49	0.225	0.130	0.215	0.734	97.70
VOL. WGT. MEAN	0.25	0.108	0.134	0.111	0.444	69.63
MISSING VALUES	13	14	12	12	8	9

**PART V**

**SUMMARY STATISTICS OF PRECIPITATION DEPOSITION BY STATION**



ONTARIO MINISTRY OF ENVIRONMENT & ENERGY  
 APIOS - ACIDIC PRECIPITATION IN ONTARIO STUDY  
 1991 SUMMARY STATISTICS OF DEPOSITION

STATION: LONGWOODS AEROCHEM SITE NO.1

		EQUIVALENT PREC. DEPTH MM		SULFATE MG/M**2	NITRATE MG/M**2	CALCIUM MG/M**2	CHLORIDE MG/M**2	MAGNESIUM MG/M**2
# OF SAMPLES	:	103		103		103		103
MAXIMUM	:	36.0		117.50	16.24	16.32	11.53	3.880
MINIMUM	:	0.0		0.00	0.00	0.00	0.00	0.000
ARTH. MEAN	:	6.7		20.69	4.05	3.11	1.69	0.610
ARTH. STD. DEV.	:	6.6		22.48	3.26	3.05	1.72	0.701
GEOM. MEAN	:	4.3		11.65	2.94	2.04	1.17	0.395
1ST QUARTILE	:	1.8		5.88	2.00	0.83	0.64	0.200
2ND QUARTILE	:	4.0		15.18	3.17	2.21	1.18	0.384
3RD QUARTILE	:	9.5		24.32	5.68	3.86	1.86	0.726
VOL. WGT. MEAN	:	0		20.53	3.98	3.03	1.67	0.606
MISSING VALUES	:	0		9	10	9	8	7
		POTASSIUM MG/M**2		SODIUM MG/M**2	AMMONIUM MG/M**2	ACIDITY GRAN UG/M**2	FREEH+ LAB UG/M**2	
# OF SAMPLES	:	103		103		103		103
MAXIMUM	:	42.560		5.015	11.750	4140.00		2994.35
MINIMUM	:	0.000		0.000	0.000	0.00		0.00
ARTH. MEAN	:	1.099		0.674	3.016	514.65		340.48
ARTH. STD. DEV.	:	4.444		0.803	2.800	636.17		470.65
GEOM. MEAN	:	0.362		0.460	1.923	238.10		68.66
1ST QUARTILE	:	0.140		0.192	0.924	98.04		33.49
2ND QUARTILE	:	0.318		0.469	1.800	343.20		188.62
3RD QUARTILE	:	0.630		0.848	4.326	672.96		427.63
VOL. WGT. MEAN	:	1.103		0.707	3.061	511.37		341.66
MISSING VALUES	:	7		6	7	6		7

ONTARIO MINISTRY OF ENVIRONMENT & ENERGY  
 APIOS - ACIDIC PRECIPITATION IN ONTARIO STUDY  
 1991 SUMMARY STATISTICS OF DEPOSITION

STATION: NORTH EASTHOPE AEROCHEM SITE NO.1

	EQUIVALENT PREC. MM	SULFATE MG/M**2	NITRATE MG/M**2	CALCIUM MG/M**2	CHLORIDE MG/M**2	MAGNESIUM MG/M**2
# OF SAMPLES	55	55	55	55	55	55
MAXIMUM	19.8	64.35	9.11	19.48	4.90	6.248
MINIMUM	0.0	0.00	0.00	0.00	0.00	0.000
ARITH. MEAN	3.7	8.29	2.70	3.22	1.07	0.707
ARITH. STD. DEV.	4.0	10.55	2.19	4.28	0.98	1.080
GEOM. MEAN	2.3	4.35	1.74	1.53	0.75	0.313
1ST QUARTILE	0.9	1.54	0.93	0.57	0.40	0.124
2ND QUARTILE	2.7	5.27	2.07	1.75	0.84	0.285
3RD QUARTILE	5.0	12.68	3.81	4.03	1.37	0.700
VOL. WGT. MEAN	0	8.28	2.65	3.09	1.07	0.678
MISSING VALUES	0	4	5	6	4	6
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	POTASSIUM MG/M**2	SODIUM MG/M**2	AMMONIUM MG/M**2	ACIDITY GRAN UG/M**2	FREEH+ LAB	UG/M**2
# OF SAMPLES	55	55	55	55	55	55
MAXIMUM	2.574	3.135	11.603	988.02	590.73	55
MINIMUM	0.000	0.000	0.000	0.00	0.00	0.00
ARITH. MEAN	0.180	0.546	1.095	244.02	112.68	
ARITH. STD. DEV.	0.354	0.595	2.032	240.73	148.41	
GEOM. MEAN	0.131	0.388	0.924	130.12	11.81	
1ST QUARTILE	0.073	0.190	0.468	64.60	1.26	
2ND QUARTILE	0.110	0.388	1.163	120.25	21.90	
3RD QUARTILE	0.153	0.660	2.203	425.94	197.74	
VOL. WGT. MEAN	0.177	0.530	1.727	210.05	114.85	
MISSING VALUES	5	2	12	12	2	2

ONTARIO MINISTRY OF ENVIRONMENT & ENERGY  
 APIOS - ACIDIC PRECIPITATION IN ONTARIO STUDY  
 1991 SUMMARY STATISTICS OF DEPOSITION

STATION: DORSET AEROCHEM SITE NO.1.

	EQUIVALENT PREC. DEPTH MM	SULFATE MG/M**2	NITRATE MG/M**2	CALCIUM MG/M**2	CHLORIDE MG/M**2	MAGNESIUM MG/M**2
# OF SAMPLES	:	209	209	209	209	209
MAXIMUM	:	49.2	149.48	18.79	15.40	10.56
MINIMUM	:	0.0	0.00	0.00	0.00	0.000
ARITH. MEAN	:	4.8	11.62	2.54	0.94	0.69
ARITH. STD. DEV.	:	7.1	20.18	3.10	1.72	1.10
GEOM. MEAN	:	2.3	4.39	1.36	0.59	0.41
1ST QUARTILE	:	0.4	1.18	0.46	0.14	0.14
2ND QUARTILE	:	2.0	4.40	1.36	0.44	0.34
3RD QUARTILE	:	6.2	12.93	3.46	1.02	0.73
VOL. WGT. MEAN	:	.	11.70	2.49	1.05	0.69
MISSING VALUES	:	0	42	44	43	40
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	POTASSIUM MG/M**2	SODIUM MG/M**2	AMMONIUM MG/M**2	ACIDITY GRAN UG/M**2	FREEH+ LAB UG/M**2	
# OF SAMPLES	:	209	209	209	209	
MAXIMUM	:	1.888	4.669	15.744	4161.20	3510.36
MINIMUM	:	0.000	0.000	0.000	3.72	0.00
ARITH. MEAN	:	0.182	0.297	1.776	436.97	239.82
ARITH. STD. DEV.	:	0.247	0.524	2.712	593.33	416.84
GEOM. MEAN	:	0.135	0.241	0.823	231.70	66.66
1ST QUARTILE	:	0.048	0.048	0.129	92.88	28.13
2ND QUARTILE	:	0.105	0.142	0.681	243.60	97.77
3RD QUARTILE	:	0.238	0.320	2.402	545.00	257.52
VOL. WGT. MEAN	:	0.188	0.378	1.885	370.63	243.36
MISSING VALUES	:	41	41	43	36	35

ONTARIO MINISTRY OF ENVIRONMENT & ENERGY  
 APIOS - ACIDIC PRECIPITATION IN ONTARIO STUDY  
 1991 SUMMARY STATISTICS OF DEPOSITION

STATION: RAVEN LAKE AEROCHEM SITE NO.1

	EQUIVALENT PREC. DEPTH MM	SULFATE MG/M**2	NITRATE MG/M**2	CALCIUM MG/M**2	CHLORIDE MG/M**2	MAGNESIUM MG/M**2
# OF SAMPLES	:	58	58	58	58	58
MAXIMUM	:	20.2	50.76	10.37	8.72	3.72
MINIMUM	:	0.0	0.07	0.05	0.04	1.280
ARITH. MEAN	:	3.2	7.98	2.35	1.01	0.000
ARITH. STD. DEV.	:	4.8	12.16	2.35	1.59	0.139
GEOM. MEAN	:	1.7	2.76	1.33	0.44	0.241
1ST QUARTILE	:	0.2	0.76	0.68	0.15	0.074
2ND QUARTILE	:	1.1	2.34	1.63	0.37	0.020
3RD QUARTILE	:	4.0	7.25	3.20	1.20	0.33
VOL. WGT. MEAN	:	8.38	2.47	1.06	0.16	0.046
MISSING VALUES	:	0	17	17	17	0.165
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	POTASSIUM MG/M**2	SODIUM MG/M**2	AMMONIUM MG/M**2	ACIDITY GRAN UG/M**2	FREEH+ LAB UG/M**2
# OF SAMPLES	:	58	58	58	58
MAXIMUM	:	0.801	1.691	9.936	1394.00
MINIMUM	:	0.017	0.028	0.000	12.88
ARITH. MEAN	:	0.108	0.343	1.109	322.29
ARITH. STD. DEV.	:	0.142	0.366	1.900	345.45
GEOM. MEAN	:	0.067	0.212	0.402	238.89
1ST QUARTILE	:	0.032	0.114	0.151	172.95
2ND QUARTILE	:	0.068	0.208	0.449	51.02
3RD QUARTILE	:	0.105	0.444	1.260	14.63
VOL. WGT. MEAN	:	0.114	0.360	1.193	214.92
MISSING VALUES	:	17	17	22	74.13
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ONTARIO MINISTRY OF ENVIRONMENT & ENERGY  
 APTOS - ACIDIC PRECIPITATION IN ONTARIO STUDY  
 1991 SUMMARY STATISTICS OF DEPOSITION

STATION: CHARLESTON LAKE AEROCHEM SITE NO.1

	EQUIVALENT PREC. DEPTH MM	SULFATE MG/M**2	NITRATE MG/M**2	CALCIUM MG/M**2	CHLORIDE MG/M**2	MAGNESIUM MG/M**2
# OF SAMPLES	117	117	117	117	117	117
MAXIMUM	48.0	134.16	19.34	9.59	4.70	2.040
MINIMUM	0.2	0.00	0.00	0.00	0.00	0.000
ARITH. MEAN	7.1	17.76	3.59	1.17	0.82	0.224
ARITH. STD. DEV.	8.0	23.34	3.25	1.60	0.85	0.319
GEOM. MEAN	4.1	7.80	2.20	0.70	0.51	0.171
1ST QUARTILE	2.0	2.72	1.03	0.23	0.22	0.038
2ND QUARTILE	4.6	10.00	2.99	0.67	0.57	0.119
3RD QUARTILE	8.7	21.36	5.08	1.39	1.03	0.259
VOL. WGT. MEAN	0	17.54	3.53	1.37	0.83	0.284
MISSING VALUES	0	7	7	5	1	1
	POTASSIUM MG/M**2	SODIUM MG/M**2	AMMONIUM MG/M**2	ACIDITY+ GRAN UG/M**2	FRESH+ LAB	UG/G/M**2
# OF SAMPLES	117	117	117	117	117	117
MAXIMUM	8.630	2.793	63.000	3962.40	3192.67	3192.67
MINIMUM	0.000	0.000	0.017	11.39	0.03	0.03
ARITH. MEAN	0.223	0.288	2.798	606.96	397.62	397.62
ARITH. STD. DEV.	0.806	0.412	6.196	622.06	478.85	478.85
GEOM. MEAN	0.130	0.250	1.200	366.70	148.60	148.60
1ST QUARTILE	0.047	0.044	0.524	176.67	64.67	64.67
2ND QUARTILE	0.101	0.181	1.544	442.00	282.53	282.53
3RD QUARTILE	0.182	0.376	2.944	722.20	468.85	468.85
VOL. WGT. MEAN	0.260	0.401	2.798	542.07	376.66	376.66
MISSING VALUES	0	1	1	1	1	1

ONTARIO MINISTRY OF ENVIRONMENT & ENERGY  
 APIOS - ACIDIC PRECIPITATION IN ONTARIO STUDY  
 1991 SUMMARY STATISTICS OF DEPOSITION

STATION: WILMER AEROCHEM SITE NO.1

	EQUIVALENT PREC., MM	SULFATE MG/M**2	NITRATE MG/M**2	CALCIUM MG/M**2	CHLORIDE MG/M**2	MAGNESIUM MG/M**2
# OF SAMPLES	45	45	45	45	45	45
MAXIMUM	26.6	38.70	5.50	3.08	2.28	0.456
MINIMUM	0.2	0.00	0.00	0.00	0.00	0.000
ARITH. MEAN	4.8	10.53	2.53	0.83	0.56	0.107
ARITH. STD. DEV.	6.1	10.98	1.75	0.65	0.55	0.099
GEOM. MEAN	2.4	6.40	1.95	0.66	0.40	0.136
1ST QUARTILE	0.8	2.80	1.20	0.45	0.20	0.051
2ND QUARTILE	2.8	7.39	2.05	0.78	0.39	0.100
3RD QUARTILE	5.4	12.20	4.39	0.97	0.73	0.156
VOL. WGT. MEAN	0	7.15	1.72	0.60	0.38	0.105
MISSING VALUES	0	26	26	26	26	20
<hr/>						
	POTASSIUM MG/M**2	SODIUM MG/M**2	AMMONIUM MG/M**2	ACIDITY GRAN UG/M**2	FRESH+ LAB UG/M**2	
# OF SAMPLES	45	45	45	45	45	45
MAXIMUM	0.570	1.254	3.540	1308.92	786.19	
MINIMUM	0.000	0.000	0.115	63.60	33.82	
ARITH. MEAN	0.117	0.328	1.356	445.26	277.90	
ARITH. STD. DEV.	0.147	0.312	1.024	349.62	228.04	
GEOM. MEAN	0.112	0.236	0.949	318.59	192.41	
1ST QUARTILE	0.036	0.122	0.560	199.36	104.41	
2ND QUARTILE	0.060	0.204	1.064	254.05	172.60	
3RD QUARTILE	0.160	0.374	1.782	707.56	313.55	
VOL. WGT. MEAN	0.110	0.274	0.957	313.98	200.50	
MISSING VALUES	20	20	20	20	21	23

ONTARIO MINISTRY OF ENVIRONMENT & ENERGY  
 APIOS - ACIDIC PRECIPITATION IN ONTARIO STUDY  
 1991 SUMMARY STATISTICS OF DEPOSITION

STATION: FERNBERG AEROCHEM SITE NO.1

	EQUIVALENT PREC. DEPTH MM	SULFATE MG/M**2	NITRATE MG/M**2	CALCIUM MG/M**2	CHLORIDE MG/M**2	MAGNESIUM MG/M**2
# OF SAMPLES	155	155	155	155	155	155
MAXIMUM	37.0	45.36	8.96	9.74	2.90	1.568
MINIMUM	0.0	0.00	0.00	0.00	0.00	0.000
ARITH. MEAN	4.9	5.68	1.29	0.83	0.32	0.140
ARITH. STD. DEV.	6.8	7.92	1.57	1.51	0.40	0.254
GEOM. MEAN	1.9	2.24	0.68	0.37	0.20	0.104
1ST QUARTILE	0.5	0.73	0.22	0.06	0.09	0.004
2ND QUARTILE	2.0	2.91	0.76	0.26	0.18	0.044
3RD QUARTILE	6.2	7.05	1.86	0.93	0.37	0.144
VOL. WGT. MEAN	4.90	4.90	1.24	0.89	0.30	0.157
MISSING VALUES	0	35	35	34	33	34
	POTASSIUM MG/M**2	SODIUM MG/M**2	AMMONIUM MG/M**2	ACIDITY GRAN UG/M**2	FREEH+ LAB	UG/M**2
# OF SAMPLES	155	155	155	155	155	155
MAXIMUM	1.169	2.030	18.144	1142.28	708.12	708.12
MINIMUM	0.000	0.000	0.000	4.16	0.16	0.16
ARITH. MEAN	0.164	0.135	1.349	204.78	61.98	61.98
ARITH. STD. DEV.	0.227	0.229	2.519	244.28	113.42	113.42
GEOM. MEAN	0.130	0.146	0.481	111.21	16.75	16.75
1ST QUARTILE	0.017	0.013	0.071	52.00	5.04	5.04
2ND QUARTILE	0.078	0.064	0.576	118.14	21.65	21.65
3RD QUARTILE	0.210	0.146	1.984	233.20	67.95	67.95
VOL. WGT. MEAN	0.164	0.181	1.362	152.36	53.08	53.08
MISSING VALUES	0	34	34	49	31	31



PART VI

SUMMARY STATISTICS OF PRECIPITATION DEPOSITION BY REGION



ONTARIO MINISTRY OF ENVIRONMENT & ENERGY  
 APIOS - ACIDIC PRECIPITATION IN ONTARIO STUDY  
 1991 SUMMARY STATISTICS OF DEPOSITION

REGION: CE

		EQUIVALENT PREC. DEPTH MM	SULFATE MG/M**2	NITRATE MG/N**2	CALCIUM MG/N**2	MAGNESIUM MG/M**2
# OF SAMPLES	:	422	422	422	422	422
MAXIMUM	:	49.2	149.48	18.79	15.40	10.56
MINIMUM	:	0.0	0.00	0.00	0.00	1.568
ARITH. MEAN	:	4.6	8.99	2.05	0.91	0.000
ARITH. STD. DEV.	:	6.7	16.01	2.61	1.63	0.148
GEOM. MEAN	:	2.1	3.24	1.05	0.48	0.252
1ST QUARTILE	:	0.4	0.96	0.36	0.11	0.12
2ND QUARTILE	:	1.9	3.55	1.03	0.36	0.008
3RD QUARTILE	:	6.0	10.05	2.83	1.01	0.057
VOL. WGT. MEAN	:		8.54	2.00	0.99	0.167
MISSING VALUES	:	0	94	94	94	0.174
						0.94
		POTASSIUM MG/M**2	SODIUM MG/M**2	AMMONIUM MG/M**2	ACIDITY, GRAN UG/M**2	FREEH+ LAB UG/M**2
# OF SAMPLES	:	422	422	422	422	422
MAXIMUM	:	1.888	4.669	18.144	4161.20	3510.36
MINIMUM	:	0.000	0.000	0.000	3.72	0.00
ARITH. MEAN	:	0.166	0.243	1.612	336.12	168.51
ARITH. STD. DEV.	:	0.230	0.427	2.564	474.81	327.71
GEOM. MEAN	:	0.122	0.197	0.619	169.94	38.88
1ST QUARTILE	:	0.035	0.036	0.110	77.12	10.99
2ND QUARTILE	:	0.090	0.115	0.606	182.26	57.51
3RD QUARTILE	:	0.210	0.275	2.016	384.80	181.35
VOL. WGT. MEAN	:	0.169	0.306	1.587	273.00	160.13
MISSING VALUES	:	92	92	81	137	84

ONTARIO MINISTRY OF ENVIRONMENT & ENERGY  
 APIOS - ACIDIC PRECIPITATION IN ONTARIO STUDY  
 1991 SUMMARY STATISTICS OF DEPOSITION

REGION:	NW	EQUIVALENT PREC. DEPTH MM	SULFATE MG/M**2	NITRATE MG/M**2	CALCIUM MG/M**2	CHLORIDE MG/M**2	MAGNESIUM MG/M**2
# OF SAMPLES	:	155	155	155	155	155	155
MAXIMUM	:	37.0	45.36	8.96	9.74	2.90	1.568
MINIMUM	:	0.0	0.00	0.00	0.00	0.00	0.000
ARITH. MEAN	:	4.9	5.68	1.29	0.83	0.32	0.140
ARITH. STD. DEV.	:	6.8	7.92	1.57	1.51	0.40	0.254
GEOG. MEAN	:	1.9	2.24	0.68	0.37	0.20	0.104
1ST QUARTILE	:	0.5	0.73	0.22	0.06	0.09	0.004
2ND QUARTILE	:	2.0	2.91	0.76	0.26	0.18	0.044
3RD QUARTILE	:	6.2	7.05	1.86	0.93	0.37	0.144
VOL. WGT. MEAN	:	4.90	4.90	1.24	0.89	0.30	0.157
MISSING VALUES	:	0	35	35	34	33	34
<hr/>							
POTASSIUM MG/M**2	SODIUM MG/M**2	AMMONIUM MG/M**2	ACIDITY GRAN UG/M**2	FREEH+ LAB UG/M**2			
# OF SAMPLES	:	155	155	155	155	155	155
MAXIMUM	:	1.169	2.030	18.144	1142.28	708.12	708.12
MINIMUM	:	0.000	0.000	0.000	4.16	0.16	0.16
ARITH. MEAN	:	0.164	0.135	1.549	204.78	61.98	61.98
ARITH. STD. DEV.	:	0.227	0.229	2.519	244.28	113.42	113.42
GEOG. MEAN	:	0.130	0.146	0.481	111.21	16.75	16.75
1ST QUARTILE	:	0.017	0.013	0.071	52.00	5.04	5.04
2ND QUARTILE	:	0.078	0.064	0.576	118.14	21.65	21.65
3RD QUARTILE	:	0.210	0.146	1.984	233.20	67.95	67.95
VOL. WGT. MEAN	:	0.164	0.181	1.362	152.36	53.08	53.08
MISSING VALUES	:	34	29	34	31	31	31

ONTARIO MINISTRY OF ENVIRONMENT & ENERGY  
 APIOS - ACIDIC PRECIPITATION IN ONTARIO STUDY  
 1991 SUMMARY STATISTICS OF DEPOSITION

REGION:	SE	EQUIVALENT PREC. DEPTH MM	SULFATE MG/M**2	NITRATE MG/M**2	CALCIUM MG/M**2	CHLORIDE MG/M**2	MAGNESIUM MG/M**2
# OF SAMPLES	:	162	162	162	162	162	162
MAXIMUM	:	48.0	134.16	19.34	9.59	4.70	2.040
MINIMUM	:	0.2	0.00	0.00	0.00	0.00	0.000
ARITH. MEAN	:	6.4	16.70	3.44	1.11	0.78	0.203
ARITH. STD. DEV.	:	7.6	22.11	3.10	1.48	0.82	0.296
GEOM. MEAN	:	3.5	7.57	2.16	0.69	0.49	0.164
1ST QUARTILE	:	1.8	2.73	1.04	0.25	0.22	0.039
2ND QUARTILE	:	4.0	9.74	2.88	0.68	0.53	0.116
3RD QUARTILE	:	7.7	20.40	4.87	1.25	1.02	0.233
VOL. WGT. MEAN	:	15.05	3.08	1.16	0.72	0.240	
MISSING VALUES	:	0	33	33	31	21	
 FREEH+ LAB							
POTASSIUM MG/M**2	SODIUM MG/M**2	AMMONIUM MG/M**2	ACIDITY GRAN UG/M**2	POTASSIUM MG/M**2	SODIUM MG/M**2	AMMONIUM MG/M**2	ACIDITY GRAN UG/M**2
# OF SAMPLES	:	162	162	162	162	162	162
MAXIMUM	:	8.690	2.793	63.000	3962.40	3192.67	
MINIMUM	:	0.000	0.000	0.017	11.39	0.03	
ARITH. MEAN	:	0.204	0.295	2.544	578.50	376.18	
ARITH. STD. DEV.	:	0.735	0.397	5.667	586.65	446.82	
GEOM. MEAN	:	0.127	0.248	1.151	357.73	155.64	
1ST QUARTILE	:	0.047	0.050	0.524	181.65	69.35	
2ND QUARTILE	:	0.094	0.188	422.40	262.04		
3RD QUARTILE	:	0.175	0.376	707.56	466.10		
VOL. WGT. MEAN	:	0.223	0.366	2.334	482.71	331.14	
MISSING VALUES	:	0	20	21	28		

ONTARIO MINISTRY OF ENVIRONMENT & ENERGY  
 APIOS - ACIDIC PRECIPITATION IN ONTARIO STUDY  
 1991 SUMMARY STATISTICS OF DEPOSITION

REGION:	SW	EQUIVALENT PREC. DEPTH MM	SULFATE MG/M**2	NITRATE MG/M**2	CALCIUM MG/M**2	CHLORIDE MG/M**2	MAGNESIUM MG/M**2
# OF SAMPLES	:	158	158	158	158	158	158
MAXIMUM	:	36.0	117.50	16.24	19.48	11.53	6.248
MINIMUM	:	0.0	0.00	0.00	0.00	0.00	0.000
ARITH. MEAN	:	5.6	16.33	3.58	3.15	1.47	0.643
ARITH. STD. DEV.	:	6.0	20.04	3.00	3.52	1.53	0.851
GEOM. MEAN	:	3.4	8.24	2.45	1.85	1.00	0.365
1ST QUARTILE	:	1.6	3.60	1.20	0.78	0.60	0.146
2ND QUARTILE	:	3.4	9.30	3.00	2.03	1.08	0.347
3RD QUARTILE	:	8.0	19.20	5.44	4.03	1.73	0.710
VOL. WGT. MEAN	:		16.31	3.53	3.06	1.46	0.633
MISSING VALUES	:	0	13	15	16	13	14
		POTASSIUM MG/M**2	SODIUM MG/M**2	AMMONIUM MG/M**2	ACIDITY GRAN UG/M**2	FREEH+ LAB	UG/M**2
# OF SAMPLES	:	158	158	158	158	158	158
MAXIMUM	:	42.560	5.015	11.750	4140.00	2994.35	
MINIMUM	:	0.000	0.000	0.000	0.00	0.00	
ARITH. MEAN	:	0.784	0.630	2.549	430.32	259.58	
ARITH. STD. DEV.	:	3.635	0.741	2.632	558.91	403.08	
GEOM. MEAN	:	0.255	0.434	1.484	197.24	36.72	
1ST QUARTILE	:	0.104	0.192	0.681	75.60	31.18	
2ND QUARTILE	:	0.215	0.436	1.552	269.97	114.60	
3RD QUARTILE	:	0.504	0.759	3.300	569.48	357.48	
VOL. WGT. MEAN	:	0.784	0.639	2.604	408.19	263.14	
MISSING VALUES	:	12	8	12	8	9	

**PART VII**

**SUMMARY STATISTICS OF AIR CONCENTRATION BY STATION**



ONTARIO MINISTRY OF ENVIRONMENT & ENERGY  
 APIOS - ACIDIC PRECIPITATION IN ONTARIO STUDY  
 1991 SUMMARY STATISTICS OF CONCENTRATION

STATION: LONGWOODS SEQUENTIAL SITE NO.1

	SULFUR DIOXIDE UG/M3	SULFATE UG/M3	NITRIC UG/M3	AMMONIUM UG/M3	TOTAL NITRATE UG/M3
# OF SAMPLES	352	352	352	352	352
MAXIMUM	43.33	31.36	2.76	7.27	3.22
MINIMUM	0.00	0.00	0.01	0.00	0.01
ARITH. MEAN	8.71	5.15	0.30	0.63	0.94
ARITH. STD. DEV.	8.10	5.40	0.32	0.60	1.58
GEOM. MEAN	5.47	3.46	0.18	0.44	1.15
1ST QUARTILE	2.69	1.95	0.09	0.19	0.58
2ND QUARTILE	6.57	3.44	0.19	0.42	1.28
3RD QUARTILE	12.38	5.76	0.40	2.67	2.67
MISSING VALUES	7	8	3	5	6

ONTARIO MINISTRY OF ENVIRONMENT & ENERGY  
 APIOS - ACIDIC PRECIPITATION IN ONTARIO STUDY  
 1991 SUMMARY STATISTICS OF CONCENTRATION

STATION: DORSET SEQUENTIAL SITE NO.1

	SULFUR DIOXIDE UG/M3	SULFATE UG/M3	NITRIC UG/M3	AMMONIUM UG/M3	TOTAL NITRATE UG/M3
# OF SAMPLES					
MAXIMUM	3.65	365	365	365	365
MINIMUM	29.90	35.97	1.39	2.16	5.53
ARITH. MEAN	0.00	0.09	0.00	0.00	0.01
ARITH. STD. DEV.	3.56	2.86	0.21	0.12	0.72
GEOG. MEAN	4.83	4.06	0.23	0.27	0.41
1ST QUARTILE	1.99	1.71	0.11	0.06	0.96
2ND QUARTILE	0.34	0.96	0.05	0.01	0.36
3RD QUARTILE	1.73	1.76	0.12	0.03	0.16
MISSING VALUES	4.58	3.22	0.31	0.09	0.86
	2	4	2	3	2

ONTARIO MINISTRY OF ENVIRONMENT & ENERGY  
 APIOS - ACIDIC PRECIPITATION IN ONTARIO STUDY  
 1991. SUMMARY STATISTICS OF CONCENTRATION

STATION: CHARLESTON LAKE SEQUENTIAL SITE NO.1

	SULFUR DIOXIDE UG/M3	SULFATE UG/M3	NITRIC UG/M3	NITRATE UG/M3	AMMONIUM UG/M3	TOTAL NITRATE UG/M3
# OF SAMPLES	:	335	335	335	335	335
MAXIMUM	:	21.99	23.40	1.08	2.01	7.60
MINIMUM	:	0.00	0.00	0.00	0.00	2.26
ARITH. MEAN	:	3.33	2.73	0.23	0.20	0.44
ARITH. STD. DEV.	:	3.92	3.42	0.20	0.26	0.37
GEOM. MEAN	:	2.09	1.63	0.16	0.12	0.49
1ST QUARTILE	:	0.54	0.79	0.09	0.05	0.31
2ND QUARTILE	:	1.79	1.77	0.16	0.12	0.16
3RD QUARTILE	:	4.90	3.16	0.30	0.55	0.33
MISSING VALUES	:	27	34	14	27	14

ONTARIO MINISTRY OF ENVIRONMENT & ENERGY  
 APTOS - ACIDIC PRECIPITATION IN ONTARIO STUDY  
 1991 SUMMARY STATISTICS OF CONCENTRATION

STATION: FERNBERG SEQUENTIAL SITE NO.1

	SULFUR DIOXIDE UG/M <sup>3</sup>	SULFATE UG/M <sup>3</sup>	NITRIC UG/M <sup>3</sup>	NITRATE UG/M <sup>3</sup>	AMMONIUM UG/M <sup>3</sup>	TOTAL NITRATE UG/M <sup>3</sup>
# OF SAMPLES	351	351	351	351	351	351
MAXIMUM	8.32	13.64	0.98	1.44	3.36	1.68
MINIMUM	0.00	0.00	0.00	0.00	0.00	0.00
ARITH. MEAN	0.97	1.53	0.10	0.07	0.43	0.17
ARITH. STD. DEV.	1.28	1.87	0.11	0.16	0.54	0.22
GEOM. MEAN	0.86	1.02	0.06	0.07	0.26	0.10
1ST QUARTILE	0.00	0.58	0.03	0.00	0.15	0.04
2ND QUARTILE	0.55	1.00	0.07	0.02	0.25	0.10
3RD QUARTILE	1.33	1.65	0.13	0.06	0.45	0.21
MISSING VALUES	:	4	3	4	3	3

PART VIII

SUMMARY STATISTICS OF AIR CONCENTRATION BY REGION



ONTARIO MINISTRY OF ENVIRONMENT & ENERGY  
 APIOS - ACIDIC PRECIPITATION IN ONTARIO STUDY  
 1991 SUMMARY STATISTICS OF CONCENTRATION

REGION: CE

	SULFUR DIOXIDE UG/M3	SULFATE UG/M3	NITRIC UG/M3	NITRATE UG/M3	AMMONIUM UG/M3	TOTAL NITRATE UG/M3
# OF SAMPLES	:	716	716	716	716	716
MAXIMUM	:	29.90	35.97	1.39	2.16	5.53
MINIMUM	:	0.00	0.00	0.00	0.00	0.00
ARITH. MEAN	:	2.30	2.21	0.16	0.10	0.58
ARITH. STD. DEV.	:	3.79	3.25	0.19	0.22	0.80
GEOM. MEAN	:	1.32	1.33	0.08	0.06	0.34
1ST QUARTILE	:	0.14	0.73	0.04	0.01	0.31
2ND QUARTILE	:	1.01	1.29	0.09	0.03	0.13
3RD QUARTILE	:	2.58	2.46	0.20	0.08	0.27
MISSING VALUES	:	6	9	5	7	6

ONTARIO MINISTRY OF ENVIRONMENT & ENERGY  
 APIOS - ACIDIC PRECIPITATION IN ONTARIO STUDY  
 1991 SUMMARY STATISTICS OF CONCENTRATION

REGION: NW

	SULFUR DIOXIDE UG/M <sup>3</sup>	SULFATE UG/M <sup>3</sup>	NITRIC UG/M <sup>3</sup>	NITRATE UG/M <sup>3</sup>	AMMONIUM UG/M <sup>3</sup>	TOTAL NITRATE UG/M <sup>3</sup>
# OF SAMPLES	351	351	351	351	351	351
MAXIMUM	8.32	13.64	0.98	1.44	0.00	1.68
MINIMUM	0.00	0.00	0.00	0.00	0.00	0.00
ARITH. MEAN	0.97	1.53	0.10	0.07	0.43	0.17
ARITH. STD. DEV.	1.28	1.87	0.11	0.16	0.54	0.22
GEOM. MEAN	0.86	1.02	0.06	0.07	0.26	0.10
1ST QUARTILE	0.00	0.98	0.03	0.00	0.15	0.04
2ND QUARTILE	0.55	1.00	0.07	0.02	0.25	0.10
3RD QUARTILE	1.33	1.65	0.13	0.06	0.45	0.21
MISSING VALUES	4	5	3	4	3	4

ONTARIO MINISTRY OF ENVIRONMENT & ENERGY  
 APLOS - ACIDIC PRECIPITATION IN ONTARIO STUDY  
 1991 SUMMARY STATISTICS OF CONCENTRATION

REGION: SE

	SULFUR DIOXIDE UG/M <sub>3</sub>	SULFATE UG/M <sub>3</sub>	NITRIC UG/M <sub>3</sub>	NITRATE UG/M <sub>3</sub>	AMMONIUM UG/M <sub>3</sub>	TOTAL NITRATE UG/M <sub>3</sub>
# OF SAMPLES	:	335	335	335	335	335
MAXIMUM	:	21.99	23.40	1.08	2.01	7.60
MINIMUM	:	0.00	0.00	0.00	0.00	2.26
ARITH. MEAN	:	3.33	2.73	0.23	0.20	0.44
ARITH. STD. DEV.	:	3.92	3.42	0.20	0.26	0.99
GEOM. MEAN	:	2.09	1.63	0.16	0.12	0.37
1ST QUARTILE	:	0.54	0.79	0.09	0.05	0.49
2ND QUARTILE	:	1.79	1.77	0.16	0.12	0.23
3RD QUARTILE	:	4.90	3.16	0.30	0.24	0.55
MISSING VALUES	:	27	34	14	33	27

ONTARIO MINISTRY OF ENVIRONMENT & ENERGY  
 APIOS - ACIDIC PRECIPITATION IN ONTARIO STUDY  
 1991 SUMMARY STATISTICS OF CONCENTRATION

REGION:	SW	SULFUR DIOXIDE UG/M3	SULFATE UG/M3	NITRIC UG/M3	NITRATE UG/M3	AMMONIUM UG/M3	TOTAL NITRATE UG/M3
# OF SAMPLES	:	352	352	352	352	352	352
MAXIMUM	:	43.33	31.36	2.76	3.11	7.27	3.22
MINIMUM	:	0.00	0.00	0.01	0.00	0.00	0.01
ARITH. MEAN	:	8.1	5.15	0.30	0.63	1.79	0.94
ARITH. STD. DEV.	:	8.10	5.40	0.32	0.60	1.58	0.70
GEOM. MEAN	:	5.47	3.46	0.18	0.44	1.15	0.67
1ST QUARTILE	:	2.69	1.95	0.09	0.19	0.58	0.40
2ND QUARTILE	:	6.57	3.44	0.19	0.42	1.28	0.76
3RD QUARTILE	:	12.38	5.76	0.40	0.89	2.67	1.27
MISSING VALUES	:	12.7	3	8	5	6	5



